

Reverse Logistics: the Key to Circular Service Logistics

According to Wouter Lampe, those who still see reverse logistics merely as the disposal of used parts are missing the transformation currently taking place in service logistics. At voestalpine Track Solutions Netherlands, reverse logistics is evolving into a strategic instrument for keeping materials available for longer, reducing supply risks, and enabling the transition towards a circular economy. “We are moving from linear supply chains to closed-loop systems. Reverse logistics is one of the keys to making that happen.”

This requires a fundamentally different way of thinking. The focus is no longer on delivering products, but on guaranteeing availability. “We are shifting from supplying parts and components to ensuring availability,” says Lampe, Director of Strategic Development. “Equipment failures need to be resolved quickly, while replacement parts may not be available for months, or sometimes even years.” This is precisely why he sees reverse logistics as a way of unlocking hidden value and putting it back into use.

Four Key Benefits

According to Lampe, a well-organized return flow delivers value in four ways. First, it prevents usable materials from remaining idle in warehouses. Maintenance and infrastructure projects almost always result in

surplus components. These often end up in local inventories and gradually disappear from sight. “That’s value sitting idle on the shelf. Once you retrieve those materials, they can be redeployed.”

Second, reverse logistics enables refurbishment and reuse, allowing systems to remain operational for much longer. Third, it strengthens supply chain resilience by reducing dependency on overseas suppliers and increasingly scarce components. Finally, reverse logistics directly supports circularity. Materials remain in circulation for longer, while recovered raw materials can be reintroduced into the production cycle. “That is not only sustainable, but ultimately economically attractive as well.”



From Linear to Circular

Remarkably, Lampe points out that this circular approach is not entirely new. “In the past, labour was inexpensive and materials were expensive. Almost everything was repaired and reused. Later, that dynamic reversed, and we moved towards a linear economy.” Today, the balance is shifting once again. Raw materials are becoming scarcer, sustainability is gaining importance, and modern technologies are making refurbishment economically viable. “In reality, we are returning to a circular economy, but this time it is far better organized and supported by data.”

From Theory to Practice

Lampe cites the refurbishment of railway signalling relays as a practical example. Since 2002, approximately 200,000 relays have been collected, refurbished and returned to service. As a result, only limited quantities of new relays need to be purchased. “What is remarkable is that a refurbished relay can actually be more reliable than a brand-new one.”

Not every component is suitable for refurbishment or recycling yet. Railway rails are one such example. If used rails can be returned directly to the steel producer after removal and remelted into new steel, a near closed-loop material cycle can be created while significantly reducing CO₂ emissions. “Technically, this is already possible. What still needs to be developed is the logistics chain around it.”

A System Transition

For Lampe, the future of reverse logistics is not about making the next incremental improvement. It is about a fundamental transformation of the entire system. Asset management, maintenance and logistics are becoming increasingly integrated and data-driven. Depending on their condition, components may be reused, refurbished, repurposed as donor parts, or processed into new raw materials. A robust digital asset management system is essential. “You need complete visibility into the parts you have, where they come from, how old they are, and what options remain available for them.”

Artificial intelligence will also play an increasingly important role. AI can help predict maintenance needs more accurately, optimize inventory levels, and organize return flows more efficiently.

Inspiration Through Collaboration

The developments at voestalpine Track Solutions Netherlands are not taking place in isolation. Lampe has been actively involved in the Service Logistics Forum (SLF) for many years, which he says continues to provide valuable inspiration. “We are deeply rooted in day-to-day operations. Within SLF, you meet people who look at the same challenges from a scientific perspective or from entirely different industries. Sometimes you learn from others, and sometimes you are the example yourself.”

He considers this combination of academic insight and practical experience to be the

network's greatest strength. "It is refreshing to be lifted above the day-to-day reality from time to time."

From Products to Performance

Lampe is convinced that service logistics will change profoundly over the next decade. The ownership of products will become less important than maintaining the availability of entire systems. This shift requires new business models as well as a different approach to supply chain design. "We are moving from components to systems, from products to performance, from ownership to availability, and from linear supply chains to closed-loop systems."

According to Lampe, service logistics deserves far more attention than it often receives today. "Many organizations still view service logistics as water coming from the tap: it is simply there. As a result, it does not always receive the attention it deserves. Yet this is exactly where major improvements can be achieved in availability, efficiency, resilience and sustainability."

In that context, reverse logistics is not the final step in the process, but rather the foundation of a new way of thinking. "It is one of the most important keys to making service logistics future-proof."

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